

LIGHT EMITTING TYPE INJECTION NEEDLE

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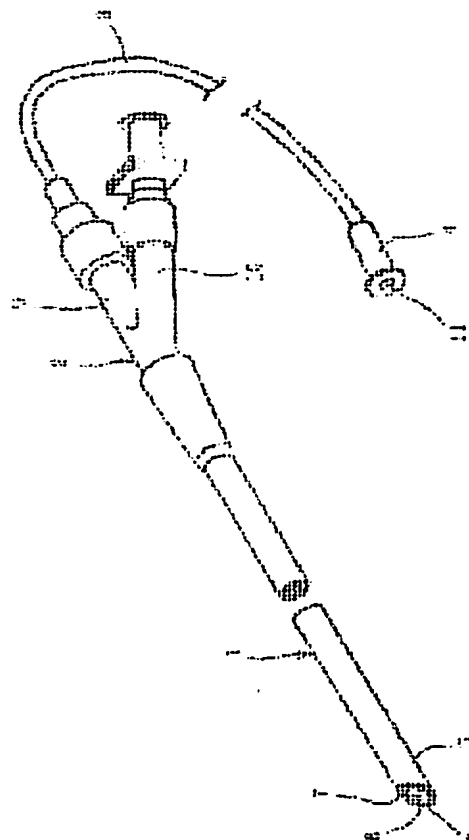
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Application number: JP19990123408 19990430**Priority number(s):** JP19990123408 19990430**Also published as:**☐ JP4268260 (B2)**Abstract of JP 2000312719 (A)**

PROBLEM TO BE SOLVED: To accurately and easily confirm the position of the needle tip by an endoscope by letting an optical fiber receiving an incident light from a light source from the rear end pass from the rear end part of the needle with an injection passage for guiding an infusion left in a needle and facing its tip to the needle tip.

SOLUTION: A needle 1 is formed into a dual structure of an outer tube 5 and an inner tube 6 and an optical fiber 7 is sandwiched between both. The outer tube 5 and the inner tube 6 are formed of metal fine tubes (cylindrical cross section), and the inner tube 6 inside is an injection passage 8 for guiding an infusion.; The inside diameter of the outer tube 5 and the outside diameter of the inner tube 6 are set to such dimensions as to leave a clearance between the inner circumferential wall of the outer tube 5 and the outer circumferential wall of the inner tube 6, and the optical fiber 7 is sandwiched in the clearance. The optical fiber 7 is entered from the rear end of the needle 1 into the clearance and its tip is faced to the needle tip. A branch tube 2 branched into branch tubes 9, 10 is attached to the rear end of the needle 1, a tube 3 is connected to the branch tube 9, and the rear end of the optical cables 7 for guiding the light from the light source are bundled and stored in the branch tube 10.



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CLAIMS

[Claim(s)]

[Claim 1]A luminescence mold injection needle with which an optical fiber in which light from a light source enters from the back end in an injection needle used for an endoscopic operation is characterized by leaving in a needle pouring passages to which infusion is led, and making a needle tip face a tip through inside of a needle from the rear end part side of a needle.

[Claim 2]A luminescence mold injection needle of claim 1, wherein a needle comprises an outer tube and an inner tube doubly, an optical fiber is put between this outer tube and an inner tube and inside of an inner tube serves as pouring passages.

[Claim 3]A branch pipe which branched to the first branch pipe that is a connection side with transfer pipet which sends out infusion, and the second branch pipe that is connection sides with an optical cable which draws light from a light source is attached to a rear end part of a needle, A luminescence mold injection needle of claim 2 which a rear end part of an optical fiber being governed by the second branch pipe, and accommodating in it.

[Claim 4]A luminescence mold injection needle of claim 3 which a tube is connected to the first branch pipe, and a tip of a tube is connected to an inner tube of a needle through inside of the first branch pipe, and is characterized by connecting a transfer pipet terminal area with a rear end part of a tube.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the injection needle used for an endoscopic operation, especially the injection needle inserted in the wall of an organ with endoscope view guess.

[0002]

[Description of the Prior Art]For example, for the therapy of the vesicoureteral reflux (back run of the urine from a bladder to a ureter and the kidney). Inserting an endoscope into a bladder, inserting the injection needle with which the endoscope was equipped in a wall of urinary bladder from the inside of a bladder, letting this injection needle pass, pouring in infusion (for example, a fat, collagen, etc.) into the wall of urinary bladder of the circumference of the ureterostoma which is carrying out the opening to the bladder, and narrowing the ureterostoma is performed. Performing observation by the endoscope out of a bladder besides pouring out of such a bladder, an injection needle is inserted from the outside of the body, such as a vaginal wall and a perineal region, and pouring in infusion from the outside of a bladder is also performed.

[0003]The small tube with an injection needle the same as fundamentally [although a difference is in thickness or length] as the needle currently used by a general injector and drop by drop titration conventionally used for the above endoscopic operations, and a sharp tip is used.

[0004]

[Problem(s) to be Solved by the Invention]If the therapy of the above-mentioned vesicoureteral reflux is explained to an example, the plug of an injection needle will be performed to the position which is distant from an injecting position, in order to prevent infusion leaking and coming out from a pinholing after the time of pouring, and pouring. That is, an injection needle is inserted in a wall of urinary bladder in the position which is separated from the ureterostoma, and can push on to near the ureterostoma along the inside of a wall of urinary bladder after that.

[0005]When using the injection needle with which the endoscope was equipped, by the angle and length which were set up beforehand, an injection needle projects from an endoscope body and it is inserted in a wall of urinary bladder. In this case, although the plug starting position of an injection needle can be recognized visually with an endoscope, the position of the needle tip which can push on from a plug starting position to near the ureterostoma along the inside of a wall of urinary bladder has where [within a wall of urinary bladder] it is located, and a problem which cannot be distinguished until it accepts the swelling by pouring of infusion.

[0006]On the other hand, when inserting an injection needle from the outside of the body, when the needle inserted from the outside of the body is pressed against a bladder outside surface, the bladder inner surface observed with the endoscope in a bladder can poke the plug starting position of the injection needle to a wall of urinary bladder, and it can be known from an uphill position.

[0007]However, it cannot be distinguished which hit the needle is located, but there is a problem which cannot but depend for derivation of a needle on a medical practitioner's experience and intuition until it presses a needle against a bladder outside surface. When carrying forward a needle to near the ureterostoma along the inside of a wall of urinary bladder, the position of a needle tip as well as the case of the injection needle with which the above-mentioned endoscope was equipped cannot be distinguished, but there is a problem which cannot but depend for derivation of a needle on a medical practitioner's experience and intuition too.

[0008]Things are desired for the ability of the position of an exact needle tip to check now easily the vesicoureteral-reflux therapy especially by pouring of infusion from the position of the needle tip at the

time of pouring posing an important problem in connection with successful failure.

[0009] This invention was made in view of such a conventional problem, and an object of this invention is to make the position of a needle tip into ** which can be checked correctly and easily with an endoscope, when inserting an injection needle in the wall of an organ with endoscope view guess from the inside of an organ.

[0010]

[Means for Solving the Problem] In an injection needle with which this invention is used for an endoscopic operation to achieve the above objects, An optical fiber in which light from a light source enters from the back end leaves in a needle pouring passages to which infusion is led, and provides a luminescence mold injection needle currently making a needle tip face a tip through inside of a needle from the rear end part side of a needle.

[0011] What this invention constitutes a needle from an outer tube and an inner tube doubly, and puts an optical fiber between this outer tube and an inner tube in the above-mentioned luminescence mold injection needle, and inside of an inner tube is made into pouring passages for, A branch pipe which branched to the first branch pipe that is a connection side with transfer pipet which sends out infusion, and the second branch pipe that is connection sides with an optical cable which draws light from a light source is attached to a rear end part of a needle, Connect a tube to governing and accommodating a rear end part of an optical fiber in the second branch pipe, and the first branch pipe, and a tip of a tube is connected to an inner tube of a needle through inside of the first branch pipe, and it includes connecting a transfer pipet terminal area with the back end of a tube as a desirable mode.

[0012]

[Embodiment of the Invention] An example of the luminescence mold injection needle concerning this invention is explained based on drawing 1 - drawing 4.

[0013] As for a needle and 2, a tube and 4 are transfer pipet terminal areas a branch pipe and 3 one in a figure.

[0014] As shown in drawing 1, although the needle 1 is what the tip comprised with the sharp small tube as usual as for the exterior, it covers an overall length mostly, and it comprises the outer tube 5 and the inner tube 6 doubly, and, moreover, the optical fiber 7 was put among both.

[0015] The outer tube 5 and the inner tube 6 comprise the respectively same metal small tubes (cross sectional circle cartridge) as usual, and serve as the pouring passages 8 to which the inside of the inner tube 6 leads infusion. As shown in drawing 2 and drawing 3, the inside diameter of the outer tube 5 and the outer diameter of the inner tube 6 serve as a size in which a crevice is left behind between the inner circle wall of the outer tube 5, and the peripheral wall of the inner tube 6, and the optical fiber 7 is put in this crevice. This optical fiber 7 enters in the above-mentioned crevice from the rear end part of the needle 1, and is making the needle tip face a tip.

[0016] As shown in drawing 1, the branch pipe 2 which branched to the first branch pipe 9 and second branch pipe 10 is attached to the rear end part of the needle 1. Although metal may be sufficient, this branch pipe 2 can be easily manufactured, if it is a product made of a synthetic resin.

[0017] The first branch pipe 9 is a connection side to transfer pipets (not shown), such as an injector for sending out infusion, and the tube 3 is connected. This tube 3 is what is used for the drop by drop titration etc., for example, and the same flexible thing, and as a tip (needle 1 side) is shown in drawing 4, it is connected to the inner tube 6 of said needle 1 through the inside of the first branch pipe 9. That is, the rear end part of the inner tube 6 is projected a little from the rear end part of the outer tube 5, and both are connected by inserting this portion in the tip part of the tube 3. The transfer pipet terminal area 4 for connecting transfer pipet is attached to the back end of the tube 3. The transfer pipet terminal area 4 by which it is shown to drawing 1 has the communicating pore 11 which inserts in the tip part of an injector.

[0018] As mentioned above, when the tip of the tube 3 connected to the first branch pipe 9 is connected to the inner tube 6 of the direct needle 1, the parts which the infusion poured in contacts serve as only the inner tube 6 of the tube 3 and the needle 1, and there is an advantage which is easy to maintain sanitary conditions. Since a motion when operating transfer pipet will not get across to the needle 1 directly if it enables it to connect the transfer pipet 12 via the tube 3, it becomes easy to carry out operation of transfer pipet.

[0019] The second branch pipe 10 is a connection side with the optical cable (not shown) which draws the light from a light source, and as shown in drawing 4, the rear end part of each optical fiber 7 is governed, and is stored in this second branch pipe 10. The rear end face of each optical fiber 7 has turned to the method of the outside of shaft orientations of the second branch pipe 10, and when an optical cable is connected to the second branch pipe 10, the light emitted from an optical cable has entered into each

optical fiber 7 from this rear end face. And the light from the light source which entered into each optical fiber 7 is emitted from the apical surface of each optical fiber 7 which faces at the tip of the needle 1.

[0020]In the above explanation, although the needle 1 explained as what comprises the outer tube 5 and the inner tube 6 doubly, it does not carry out but such dual structure can also be constituted only from the outer tube 5. That is, leaving the pouring passages 8 to the central part of the outer tube 5, and carrying out adhesion fixing of each optical fiber 7 over the inner surface of the outer tube 5 can also obtain the luminescence mold injection needle of this invention. However, in the rear end part of the outer tube 5, when it does in this way, since it becomes difficult to carry out connection processing by the side of transfer pipet, and drawer processing of each optical fiber 7, it is preferred that these consider it as dual structure like the easy above-mentioned example.

[0021]Although the example explained based on the drawing is a thing of the type used from the outside of the body inserting, For example, the tube 3 is directly connected to the inner tube 6, without forming the branch pipe 2, and it can also be considered as the injection needle of the type with which an endoscope is equipped by having this tube 3 and composition which arranges the optical fiber 7 pulled out from the rear of the needle 1 along with the pipe of an endoscope.

[0022]

[Effect of the Invention]Since this invention is a thing as explained above and the light from a light source can be made to emit from a needle tip via the optical fiber 7, For example, in the therapy of the vesicoureteral reflux, the position of a needle tip can be grasped with an endoscope from the position of this light that is transparent and visible from a wall of urinary bladder, and it can depend on neither experience nor intuition, but the position of an exact needle tip can be known easily. Therefore, it becomes possible to adjust the injecting position of infusion to the optimal position for a therapy easily.

[0023]This luminescence mold injection needle is also applicable to being effective also in the therapy of the urinary incontinence which pours into a side urethra part besides the therapy of the illustrated vesicoureteral reflux, and the various therapies of an organ which can insert endoscopes, such as the stomach and intestines, for example.

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